Understanding and Creating Art with AI: Review and Outlook

Abstract

Technologies related to artificial intelligence (AI) have a strong impact on the changes of research and creative practices in visual arts. The growing number of research initiatives and creative applications that emerge in the intersection of AI and art motivates us to examine and discuss the creative and explorative potentials of AI technologies in the context of art. This article provides an integrated review of two facets of AI and art: (1) AI is used for art analysis and employed on digitized artwork collections, or (2) AI is used for creative purposes and generating novel artworks. In the context of AI-related research for art understanding, we present a comprehensive overview of artwork datasets and recent works that address a variety of tasks such as classification, object detection, similarity retrieval, multimodal representations, and computational aesthetics, among others. In relation to the role of AI in creating art, we address various practical and theoretical aspects of AI Art and consolidate related works that deal with those topics in detail. Finally, we provide a concise outlook on the future progression and potential impact of AI technologies on our understanding and creation of art.